NNSA 2012 LDRD Symposium:
Discovery and Innovation for National Security

June 12, 2012
AAAS Center—1200 New York Avenue NW—Washington, D.C.
Unclassified Symposium

Agenda

7:30-8:30	**Registration**
8:30-8:40	**Welcome** *Robert E. Meisner, Director, LDRD Program*
8:40-9:10	**NNSA Overview** *Neile L. Miller, Principal Deputy Administrator for NNSA*
9:10–9:40	**Travel Along the Uncharted Route, the Path to Discovery.** *Charles V. Shank, Senior Fellow, Janelia Farm Research Campus, Howard Hughes Medical Institute; Director Emeritus of Lawrence Berkeley National Laboratory*
9:40–10:10	**Advancing the Frontiers for National Security** *J. Stephen Rottler, Chief Technology Officer and Vice President of Science and Technology, Sandia National Laboratories*
10:10–10:25	**Break**
10:25–10:55	**Building Science and Technology to Address Problems at the National Scale** *Alan R. Bishop, Principal Associate Director, Science Technology & Engineering, Los Alamos National Laboratory*
10:55–11:25	**Strategies for Innovation in the National Security Context** *Tomàs Dìaz de la Rubia, Deputy Director for Science and Technology, Lawrence Livermore National Laboratory*
11:25-11:55	**White House Priorities for Science, Technology and Innovation** *Thomas A. Kalil, Deputy Director for Policy for the White House Office of Science and Technology Policy*
12:00–1:30	**Poster Presentations**

1:30-2:00	**Innovate or Evaporate** *Norman R. Augustine, Retired Chairman & CEO, Lockheed Martin Corporation*
2:00-2:20	**AQUARIUS: Adiabatic Quantum Architectures in Ultracold Systems** *Andrew Landahl, Sandia National Laboratories*
2:20–2:40	**Earth, Wind and Fire: Sensing and Modeling for National Security** *Curtt Ammerman, Los Alamos National Laboratory*
2:40–3:00	**Advances and Challenges in Uncertainty Quantification with Application to Climate Prediction, Inertial Confinement Fusion Design, and Science-based Stockpile Stewardship** *Richard Klein, Lawrence Livermore National Laboratory*
3:00-3:20	**High Definition Optical Velocimetry: A New Diagnostic Paradigm for Nuclear Security** *Ed Daykin, Nevada National Security Site*
3:20–4:00	**Break and Poster Session**
4:00–5:00	**Panel Discussion: Discovery and Innovation Issues for National Security** *Moderator: Victor Reis, Senior Policy Advisor, Office of the Secretary, Department of Energy* *Panelists: Stephen Rottler, Tomàs Dìaz de la Rubia, Alan Bishop*
5:00	**Awards for Poster Excellence**

Poster Presentations

Sandia National Laboratories

Understanding the High Temperature Limit of THz Quantum Cascade Lasers (QCLs) through Inverse Quantum Engineering (IQE), *Inès Montaño*

SpinDx: Rapid Radiation Biodosimetry, *Greg J. Sommer*

From Benchtop to Raceway: Spectroscopic Signatures of Dynamic Biological Processes in Algal Communities, *Jerilynn Timlin*

Enhanced Light-Matter Interactions at Nanoscales for Coherent Information Transduction, *Peter Rakich*

High Data-Rate Atom Interferometer for Measuring Acceleration, *Grant Biedermann*

The Sandia Cooler: A Fundamentally New Approach to Air Cooled Heat Exchangers, *Jeffrey Koplow*

Nonresonant Broadband Funneling of Light via Ultrasubwavelength Channels, *Ganapathi Subramania*

Los Alamos National Laboratory

Turning Sugars into Fuels: How Sweet It Would Be, *John Gordon*

Nanostructures for Solar Energy and Probing the Brain, *Shadi Dayeh*

Avoiding Collisions in Space, *Josef Koller*

Putting "Useless" DNA to Use, *Elizabeth Hong-Geller*

What Triggers an Earthquake?, *Robert Ecke*

Human-like Computer Vision Using Deep, Sparse Models, *Steven Brumby*

Ultra-low Field MRI: Seeing Vision in Action, *Michelle Espy*

Lawrence Livermore National Laboratory

Additive Micro and Nanomanufacturing for Engineered Materials, *Chris Spadaccini*

Distributed Behavior Analysis for Cyber Security Situational Awareness, *Celeste Matarazzo*

Electron–Positron Jets Created by Ultra-Intense Lasers, *Scott Wilks*

Flexible and Rapid Therapeutic Countermeasures for Global Biosecurity, *Patrik M. D'haeseleer*

Nuclear Photonics for Nuclear Waste Characterization, *Eric Jurgenson*

Efficient High-Order Schemes for Incompressible Flows in Complex Moving Geometry,
William D. Henshaw

Extreme Compression Science, *Jon H. Eggert*

Nevada National Security Site

Miniaturized Multi-Band Antenna via Element Collocation, *Ryan P. Martin*

Solid-State Photomultiplier Development for Radiation Detection, *Stuart Baker*

Investigation of an MLE Algorithm for Quantification of Aerial Radiological Measurements, *Michael Reed*

Advanced High-Speed 16-Bit Digitizer System, *Michael Jones*

Y-12 National Security Complex

Optimization of a Novel Semiconducting Neutron Detection Material, *Ashley C. Stowe*

Pantex Plant

The Application of Ultra-High Performance Liquid Chromatography to Explosive Testing, *Kevin Morris*

Kansas City Plant

Shear Seismic Waves for Underground Structure Detection, *Antonio Gomez*

Savannah River Site

Porous-Walled Hollow Glass Microspheres – From PDRD/LDRD to an Explosion in New Technologies, *G. G. Wicks*